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SPRAYING WILL SAVE THE PICKLE CROP.

F. H. HALL, F. A. SIRRINE AND F. C. STEWART.

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*Connected with Fertilizer Control.

†Connected with Second Judicial Department Branch Station.

POPULAR EDITION*

OF

BULLETIN NO. 156.

SPRAYING WILL SAVE THE PICKLE CROP.

F. H. HALL

Four years ago many Long Island cucumber growers thought the pickle industry of that section **menaced.** Only a few seasons before, yields of 125,000 small cucumbers, "pickles," had not been uncommon; and the crops, finding ready sale in cash markets, had brought comfortable additions to the bank accounts of the growers.

The rapid advance of a destructive enemy soon changed this pleasant condition and made the future prospect of the industry a dismal one. Downy mildew (*Plasmopara cubensis*) or, as it was commonly called, "blight," appeared and spread so rapidly that it threatened the destruction of all late-planted vines in every part of the Island. Yields lessened rapidly from year to year and in 1895 the growers sold less than a quarter of a full crop. The season's balance had to be placed on the wrong side of the ledger; for nearly all pickle raisers lost money. Small wonder that they despaired! The mysterious enemy was active and was increasing in strength; and they knew not how to meet the foe. No successful remedy for the disease was known; or at least none was generally used.

* This is a brief review of Bulletin No. 156 of this Station on Spraying Cucumbers in the Season of 1898, by F. A. Sirrine and F. C. Stewart. Anyone interested in the detailed account of the investigations will be furnished, on application, with a copy of the complete bulletin; and the names of those who so request will be placed on the Station mailing list to receive future bulletins, popular or complete as desired.

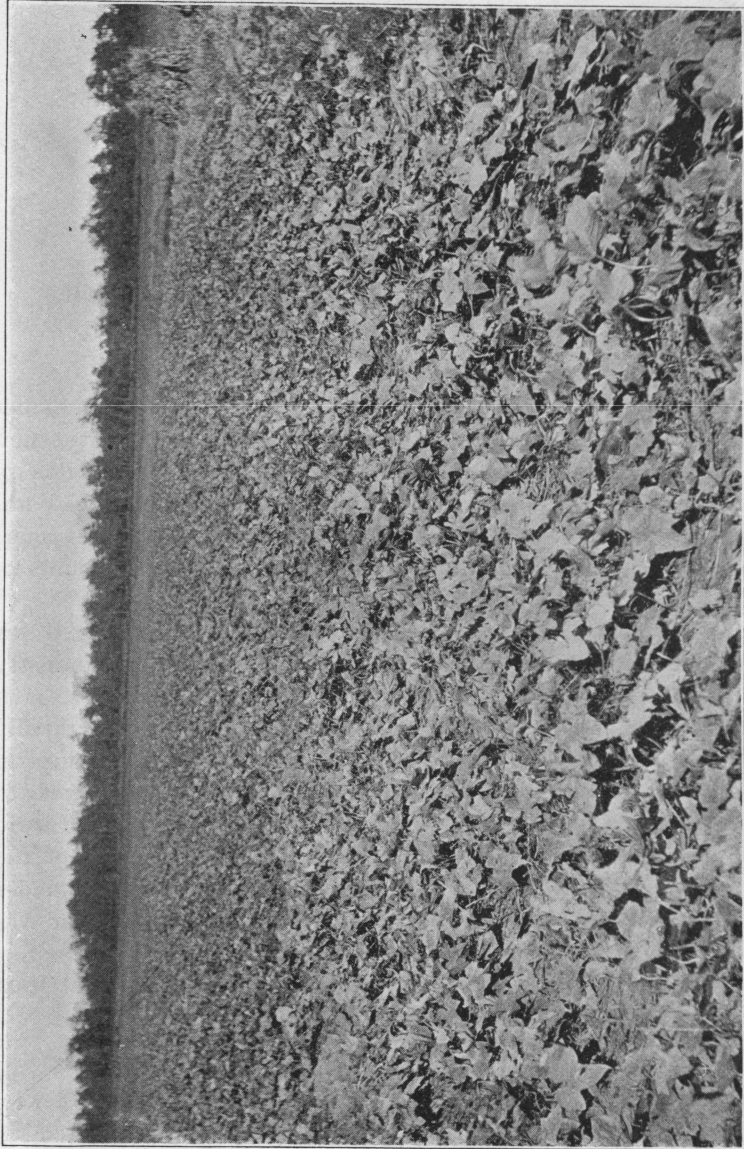


PLATE I —THE SPRAYED FIELD AT DEER PARK.
Photographed September 28.



PLATE II.—AN UNSPRAYED AT DEER PARK.
Photographed September 28.

**Hope in
sight.**

In 1896 this Station attacked the problem and in a most striking experiment* proved that the dreaded mildew can be easily, effectively and profitably combated. Additional tests† along the same line were made in 1897 and it was shown that not only the pickle crop from late planted vines but the early cucumbers as well, can be protected against the most common diseases attacking them by a few sprayings with Bordeaux mixture. Last season additional experiments were carried on with similar results. The attacks of mildew were easily and almost completely prevented; and the owners of sprayed fields made good profits while nearly all other growers on the Island failed to get sufficient returns to pay them for the land and labor devoted to their crops.

**Early
success.**

In 1896 portions of a field of late cucumbers at Woodbury were left unsprayed and mildew ruined the vines before August 21. From the sprayed portions of the same field of $1\frac{3}{4}$ acres, the owner sold pickles which brought him \$260—a net gain, after deducting the cost of spraying, of \$163.50 an acre due to spraying.

In 1897 a sprayed plat of early cucumbers yielded at the rate of 71,100 fruits per acre and an unsprayed plat beside it, 40,650 fruits. The cucumbers on the sprayed plat were much larger and heavier, the crop weighing almost twice as much as that from the unsprayed plat. A later experiment of the same year resulted in a yield of 101,960 pickles from an exact acre of late cucumbers, sprayed; while the average yield for the Island during this season was less than 20,000 pickles.

**Proof
positive.**

In order to apply these results to actual field practice and to distribute the object lesson showing the benefit from spraying, four farms in different parts of the Island were selected for experimental purposes in 1898. The owner of each farm chose the location, applied the fertilizer, prepared the soil, selected the variety and cultivated the crop of late cucumbers as seemed best to him; and a representative of the Station supervised the spraying of the vines as often as was necessary. Decided differences in natural

* See N. Y. Agrl. Expt. Sta. Bul. 119.

† See N. Y. Agrl. Expt. Sta. Bul. 138.

fertility of the soil, methods of cultivation, amount of fertilizer used and variety of cucumber planted made the results far from uniform ; but in three of the four cases the spraying gave a profit varying from moderate to very large. In the one case in which the yields from the sprayed field did not equal those from unsprayed areas on adjoining farms, the low yield is directly traceable to late planting, poor stand and lack of fertility in the soil. This farm need not be considered except as a bad example. Spraying will not *produce* crops ; it simply protects from disease and so enables plants to do their best under the circumstances in which the grower places them. The greatest gain from spraying as well as the largest profit from the crop is likely to come to the raiser who best meets the plants' needs in other respects.

The principal data in the three cases which can fairly be considered are shown in the table below :

YIELD AND GAIN PER ACRE FROM SPRAYED CUCUMBERS.

Location of experiment.	Total yield.	Market value.	Cost of spraying.	Gain from spraying.*	Cost of crop.	Profit from crop.
	<i>Pickles.</i>					
Greenlawn	120,917	\$145 67	\$23 74	\$73 74	\$78 54	\$67 13
Deer Park	75,675	83 24	22 10	22 51	69 89	13 35
Smithtown Branch...	66,790	83 49	17 03	37 00	76 75	6 74
Average	87,794	\$104 13	\$20 96	\$44 42	\$75 06	\$29 07

* As compared with returns from average yields in vicinity ; 40,000 at Greenlawn, 35,000 at Deer Park and 23,564 at Smithtown Branch.

It will be seen from these figures that there was a decided gain from spraying in each case, the amounts ranging from \$22.50 an acre to \$73.75. These growers made some profit on their crops, while their neighbors lost money ; for in each locality the gain from spraying was greater than the entire profit on the crop. If these men had not sprayed, their returns would have been less than the outlay.

**Method
easy.**

How were these results obtained? Simply by spraying the vines with Bordeaux mixture (1 to 8 formula) beginning about July 20, and repeating the application every eight or ten days until frost. This required seven or eight applications and each treatment cost from \$2.43 to \$3.29 per acre, varying with the size of the field, distance necessary to carry water and other factors. The figures given include all items of expense: wear and tear of apparatus, chemicals and freightage on them and a very liberal allowance for labor. A half day for men and team was charged against each application, while in many cases the work was all done in two or three hours. The cost would probably be much reduced in spraying larger areas, the largest field in this test containing less than $2\frac{1}{4}$ acres.

Apparatus. The apparatus used consisted of a barrel with detachable top to which was fastened an Eclipse spray pump, and two 20-foot leads of hose each provided at first with one "Deming Vermorel" nozzle and later, when the vines became larger, with two nozzles connected by brass tubing so bent that the nozzles were about 18 inches apart. This outfit, exclusive of the cart or wagon which may be found on every farm, cost \$27.46 when set up ready for work.

The proof seems complete that pickles can be grown at a profit upon Long Island if on good soil, properly cared for and thoroughly sprayed.

Summary. The Station recommends no particular cultural methods, leaving these to the judgment of the grower. It does say, though, with all emphasis, that thorough spraying, begun between July 15 and August 1 as the season demands and continued at intervals of eight or ten days until frost kills the vines, will most effectually prevent mildew and allow the plants to mature the best crops the soil and surroundings will produce.